

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A system for accessing and transmitting different data frames in a digital transmission network, the system comprises:

at least one user-network interface (UNI), coupled with a subscriber's network; and at least a network-network interface (NNI), coupled with the digital transmission network to transfer data; and

a data converting device, coupled with the UNIs and the NNIs, configured to convert data formats between the UNIs or data formats between the NNIs or data formats between the UNIs and the NNIs;

the data converting device comprises a virtual bridge device and a virtual interface device, the virtual interface device coupled to the UNIs and the NNIs, the virtual bridge device comprises:

an inter-device interface, configured to input and output the data frames;

a virtual bridge processing unit, coupled with the inter-device interface for processing of the data frames;

a database, coupled with the virtual bridge processing unit and configured to store information indicative of data types to facilitate the processing of the data frames of the virtual bridge processing unit according to the data types; and

a control interface unit, coupled with the database, the database being controlled via the control interface unit, wherein

the virtual bridge device is configured to
determine whether the data frames entering the virtual bridge device are control messages,
transmit the control messages to an external control system via the control interface unit if
the data frames entering the virtual bridge device are control messages,

extract an input data type number, a destination address and a ~~virtual~~ Virtual Local Area
Network (VLAN) number from each of the data frames if the data frames entering the virtual
bridge device are not control messages,

perform a first searching in the database according to the input data type number and
determine whether [[the]] a first retrieval result from the first searching is blank, discard the data
frames and end the processing if the first retrieval result is blank and extract a virtual bridge
number and a port number from the first retrieval result if the first retrieval result is not blank,

determine [[the]] a flow of the processing [[flow]] according to the destination address,
perform a multicasting sub-flow, and then end the processing if the destination address is a
multicasting address; perform a broadcasting sub-flow, and then end the processing if the
destination address is a broadcasting address,

perform a second searching in the database according to the virtual bridge number, the port
number, the destination address and the VLAN number if the destination address is neither a
multicasting address nor a broadcasting address,

if a second retrieval result from the second searching is blank, perform the broadcasting
sub-flow or discard the data frames and end the processing ~~if the retrieval result is blank~~; and

if the second retrieval result is not blank, extract an output port number from the second
retrieval result, perform a third searching in the database according to the virtual bridge number
and the output port number; determine a third retrieval result from the third searching, discard

the data frames and ending the processing if the third retrieval result is blank; extract an output type number information from the third retrieval result, modify the data frames so as to replace the input data type number in the data frames with the output data type number, send the modified data frames via the inter-device interface, and then end the processing if the third retrieval result is not blank if the retrieval result is not blank.

2. (Previously presented) A system for accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein the data converting device comprises a data processing and dispatching device, the inter-device interface connects with the data processing and dispatching device.

3. (Currently amended) A system for accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein the database comprises a virtual bridge database, a multicasting database and a forwarding database; the multicasting database and the forwarding database store the virtual bridge number, an input port number, the destination address, the Virtual Local Area Network (VLAN) number, a ~~virtual~~ Virtual Metropolitan Area Network (VMAN) number, the output port number; the virtual bridge database stores the input data type number, the virtual bridge number, the port number, the output data type number.

4. (Previously presented) A system for accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein the control interface unit provides an external control interface and adds, deletes, modifies and searches in the database via the control interface, and monitors the virtual bridge processing unit.

5. (Previously presented) A system for accessing and transmitting different data frames in a digital transmission network according to claim 1, wherein the virtual bridge processing unit processes the data frames according to embedded logic and controls formats of forwarding items in the forwarding database, formats of multicasting items in the multicasting database, and formats of items in the virtual bridge database.

6. (Currently amended) A method of accessing and transmitting different data frames in a digital transmission network through a system including a virtual bridge device, wherein the virtual bridge device comprises:

an inter-device interface configured to input and output the data frames;

a virtual bridge processing unit, coupled with the inter-device interface for processing of the data frames;

a database, coupled with the virtual bridge processing unit and configured to store information indicative of data types to facilitate the processing of the data frames of the virtual bridge processing unit according to the data types; and

a control interface unit coupled with the database, the database being controlled via the control interface unit,

wherein the method comprises the following steps:

determining whether the data frames entering the virtual bridge device via the inter-device interface are control messages;

if they are control messages, transmitting the data frames to an external control system via the control interface unit and ending the processing;

if they are not control messages, extracting an input data type number, a destination address and a ~~virtual~~ Virtual Local Area Network (VLAN) number from the data frames;

performing a first searching in the database according to the input data type number and determining whether ~~[[the]]~~ a first retrieval result from the first searching is blank;

if the first retrieval result is blank, discarding the data frames and ending the processing;

if the first retrieval result is not blank, extracting a virtual bridge number and a port number from the first retrieval result;

determining ~~[[the]]~~ a flow of the processing-flow according to the destination address;

if the destination address is a multicasting address, performing a multicasting sub-flow, and then ending the processing;

if the destination address is a broadcasting address, performing a broadcasting sub-flow, and then ending the processing;

otherwise, performing a second searching in the database according to the virtual bridge number, the port number, the destination address and the VLAN number;

if ~~[[the]]~~ a second retrieval result ~~from the second searching~~ is blank, performing the broadcasting sub-flow or discarding the data frames and ending the processing;

if the second retrieval result is not blank, extracting an output port number from the second retrieval result, performing a third searching in the database according to the virtual bridge number and the output port number; determining a third retrieval result from the third searching; discarding the data frames and ending the processing if the third retrieval result is blank; extracting an output type number information from the third retrieval result; modifying the data frames so as to replace the input data type number in the data frames with the output data type number, sending the modified data frames via the inter-device interface, and then ending the processing if the third retrieval result is not blank.

7. (Previously presented) A method according to claim 6, wherein the step of extracting the input data type number, the destination address and the VLAN number from the data frames also comprises a step of extracting source address of input data.

8. (Currently amended) A method according to claim 6, wherein the database comprising a virtual bridge database, and the step of performing the first searching in the database according to the input data type information-number and determining whether the first retrieval result is blank further comprises:

Searching performing the first searching in the virtual bridge database with the index of extracted data type number information;

[[If]] if the first retrieval result is not blank, learning the source address and updating the forwarding database according to [[the]] a learning result.

9. (Currently amended) A method according to claim 8, wherein the database comprising a forwarding database, and the step of performing the second searching in the database according to the virtual bridge number, the port number, the destination address and the VLAN number comprises: performing the second searching in [[a]] the forwarding database according to the virtual bridge number, the port number, the destination address, the VLAN number.

Claim 10 (Canceled).

11. (Currently amended) A method according to claim 6, wherein the database comprising a virtual bridge database, and the broadcasting sub-flow comprises:

performing a fourth searching in the virtual bridge database for a first item, as a fourth retrieval result, corresponding to a virtual bridge having an index corresponding to the virtual bridge number;

determining based on the fourth retrieval result,

if the fourth retrieval result is blank, discarding the data frames and ending the sub-flow;

if the fourth retrieval result is not blank, comparing the input data type number in the fourth retrieval result with the type number in the data frames;

if the input data type number in the fourth retrieval result and the type number in the data frames are equal, performing the fourth searching in the virtual bridge database for a second item, as [[a]] the fourth retrieval result, corresponding to the virtual bridge with the index of the virtual bridge number, and then returning to the step of determining based on the fourth retrieval result;

if they are not equal, copying the data frames, extracting output data type number from the retrieval result and modifying the copied data frames so as to replace the type number in the copied data frames with the output data type number, and then outputting the modified copied data frames via the inter-device interface.

12. (Currently amended) A method according to claim 6, wherein the database comprising a multicasting database, and the multicasting sub-flow comprises:

based on the index of the virtual bridge number, input port, destination address, and Virtual Local Area Network (VLAN) number,

performing a fifth searching in the multicasting database for a first item, as a fifth retrieval result, corresponding to the index of the virtual bridge number, input port, destination address, and Virtual Local Area Network (VLAN) number ~~these key-words~~;

determining based on the fifth retrieval result,

if the fifth retrieval result is blank, discarding the data frames and ending the sub-flow;

if the fifth retrieval result is not blank, comparing the output port number in the fifth retrieval result with the extracted input port number;

if the output port number in the fifth retrieval result and the extracted input port number are equal, performing the fourth searching in the multicasting database for a second item, as [[a]] the fifth retrieval result, with the index of the virtual bridge number, input port, destination address, and VLAN number, then returning to the step of determine based on the fifth retrieval result;

if they are not equal, perform a sixth searching in the virtual bridge database with the index of the virtual bridge number and output port number;

if [[the]] a sixth retrieval result from the sixth searching is blank, discarding the data frames, and perform the fifth searching in the multicasting database for the next item with the index of the virtual bridge number, input port, destination address, and VLAN number, and returning to the step of determining the fifth retrieval result;

if the retrieval result is not blank, copying the data frames, extracting output type number from the retrieval result, modifying the copied data frames so as to replace a type number in the copied data frames with the output data type number, and then outputting the modified copied data frames via the inter-device interface.